Implementing the European strategy on High Performance Computing

PRACE Scientific and Industrial Conference 2015

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Digital Single Market Strategy for Europe

Overarching policy framework adopted by the Juncker's Commision on May 5th, 2015

DSM in a nutshell

- Better online access to digital goods and services
  - Helping to make the EU's digital world a seamless marketplace to buy and sell
- An environment where digital networks and services can prosper
  - Designing rules which match the pace of technology and support infrastructure development
- Digital as a driver for growth
  - Ensuring that Europe's economy, industry and employment take full advantage of digitalisation

Digitising industry

Context: The EU manufacturing sector accounts for 2 million companies and 33 million jobs;15 % of our GDP, 80% of our exports and 2/3 of R&D investment

Increased use of digital technologies brings innovation into more productive and more efficient production processes, and in new business models

Objective: maximise the benefits from the uptake of digital technologies across European industry, while ensuring that our industrial fabric and our workforce adapt to the digital era

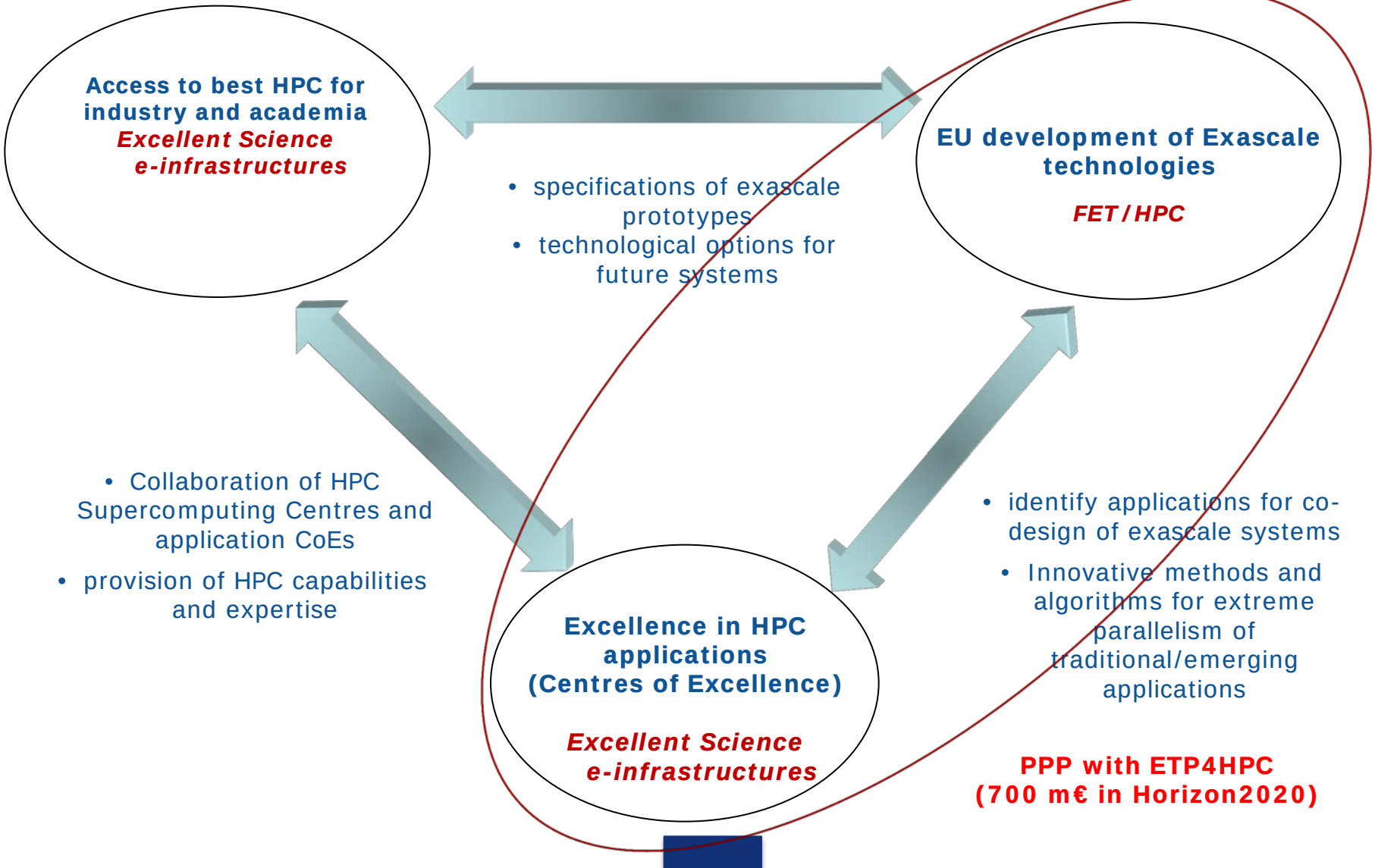
The necessary infrastructure for innovation will combine Cloud, HPC and Big Data resources and capabilities (e.g. Science Cloud)

Digitising industry through HPC

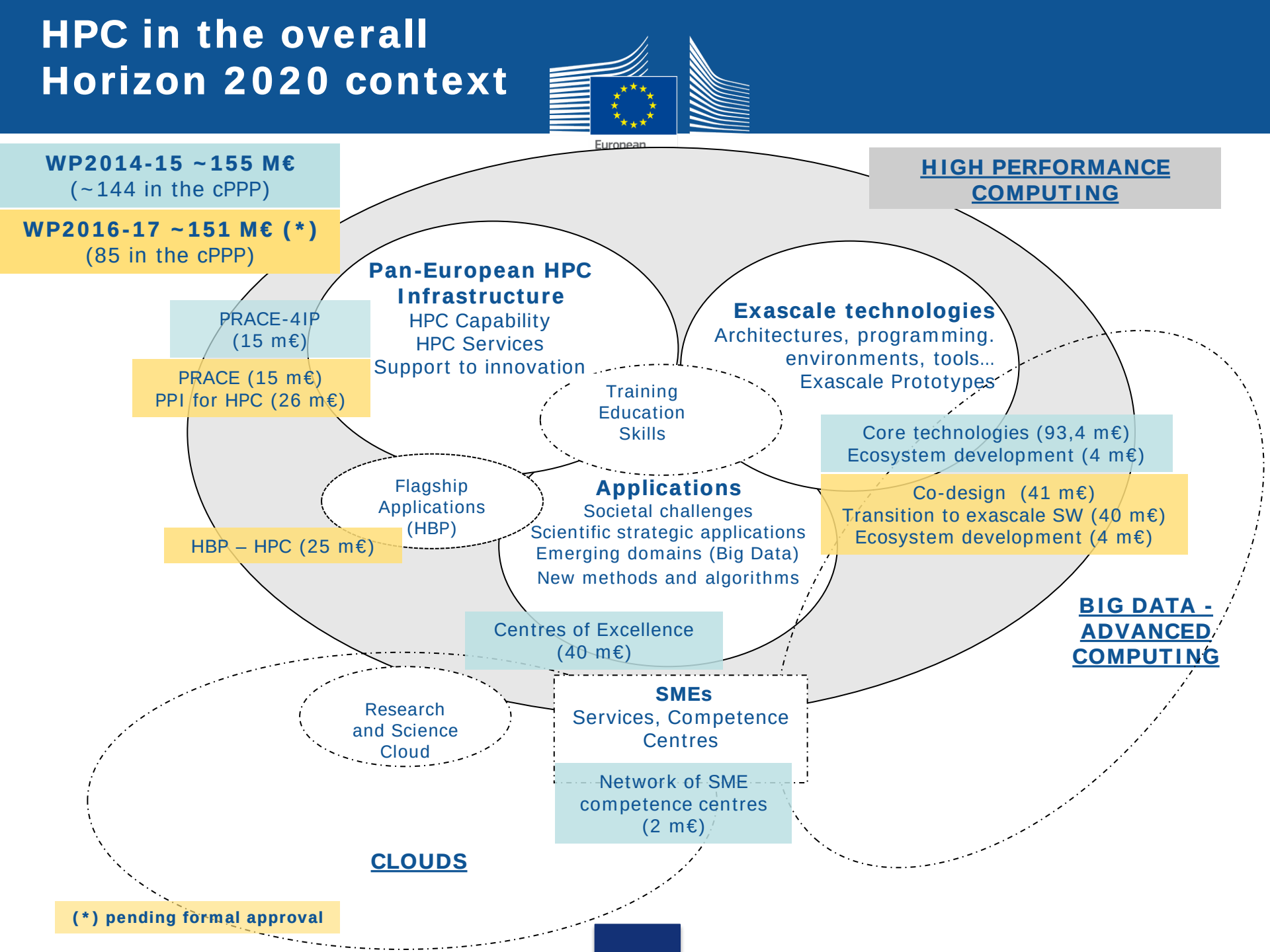
The European HPC strategy is an essential building block to meet the ambitions of the DSM for Europe to ***digitise industry***

- HPC transforms big scientific, industrial and societal challenges into innovation and business opportunities
- HPC and Big Data drive major advances and innovation in the global digital economy, giving a competitive edge and faster access of innovation results to markets
- World-class computing capability in Europe as part of the European Research and Science Cloud will consolidate Europe's place as a world-leading innovation hub

HPC Strategy in Horizon 2020



HPC in the overall Horizon 2020 context



Next steps in Horizon 2020

Establishment of first Centres of Excellence (end 2015)

Study to follow the progress on the implementation of the European HPC strategy (mid-2015)

- HPC market and HPC R&I landscape in the EU
- Impact and the return on HPC investments in innovation and economic progress and growth in the EU.
- Status of the implementation of the HPC Communication Action Plan

Report to Parliament and Council on European HPC strategy (end 2015)

E-Infra Workprogramme 2016-17

European Commission

Warning: pending formal approval

- Focus on service orientation and innovation

- Support to implementation of the Pan-European HPC infrastructure (PRACE)
- Support to procurement of innovative solutions in HPC (PPI)
- Core technologies towards exascale (PPP in HPC)
- HPC platform of the Human Brain Project (HBP)
- User-driven innovation (open call mechanism)
  - Link to FORTISSIMO, SHAPE?

Next steps in the HPC strategy

Continue technological development of key building blocks and HPC applications

- FET programme towards exascale
- e-infrastructure HPC Centres of Excellence for application co-design, development, optimization and provisioning

Integration of technological building blocks into extreme-scale platforms / demonstrators

- proof-points of technological readiness, usability and scalability
- co-design process meeting the needs of strategic European applications, linking the industrial environment supply and use
- exascale performance expected by 2021-2022 in view of exascale by 2023

Coordinated acquisition strategy complementing integration

- procurement/acquisition of pre- and exascale systems for transitioning the European set of leading machines to the new computing generation (collaboration with PRACE)

HPC Timeline in H2020 for the PPP

2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

Projects start

Projects from 2014 Call:
Building technology blocks
&
1st round CoEs

Projects from 2016 Call:
1st level co-design

Projects from 2017 Call:
Exascale transition

Future 2018/19/20 Calls:
Extreme Scale Demonstrators
(2nd-level co-design / integration)
&
2nd round of CoEs
(draft)

HPC Ecosystem development

European Commission

In response to Jean-Christophe

Preparation of the Council ("Competitiveness") of 28-29 May 2015

Draft Council conclusions on open, data-intensive and networked research as a driver for faster and wider innovation

12. STRESSES the importance of PRACE[12], a world-class European High Performance Computing (HPC) infrastructure for research that provides access to computing resources and services for large-scale scientific and engineering applications; ACKNOWLEDGES the need to develop the new generation of HPC technologies and CALLS for the reinforcement of the interconnected network of data processing facilities GEANT[13]. In this respect, INVITES ESFRI to explore mechanisms for better coordination of Member States' investment strategies in e-infrastructures, covering also HPC, distributed computing, scientific data and networks;

European Commission

Thanks!